

## REMARKS

This Amendment is submitted in response to the non-final Office Action of July 14, 2008. Claims 1-3, 6, 12-42 and 47-56 are pending with claims 1, 13, 23, 35, 41, 48 and 56 being independent. Claims 1 and 56 are amended by this response and Claim 57 is added. No new matter is included and support can be found at least in paragraphs [0037]-[0055].

### I Interview of November 4, 2008

Applicants thank Examiner Zhong for granting an in-person interview on November 4, 2008. Examiner Zhong and Applicant's representatives, Micah Goldsmith and MacLane Key, were in attendance. The claim rejections and cited art were discussed. Agreement was not reached, but Examiner Zhong indicated he would perform a new search in light of amendments presented by this response.

One feature that appeared to interest Examiner Zhong more than others is the aspect of transmitting an intra frame by a unicast message and switching the receiver to receiving a multicast video stream such that the receiver starts receiving from the multicast video stream after that intra frame is transmitted by the multicast stream. In a prior art system without this feature, if a receiver cannot join the multicast message by the intra frame, the receiver must wait an entire cycle of the encoding scheme (e.g., the receiver must wait for the next intra frame in the multicast video stream) before it can decode and display the new channel, resulting in an additional delay.

In contrast, in a system having the above feature, because the intra frame is transmitted in a unicast message for static display while the receiver is unable to dynamically display the new channel, the receiver is not required to wait the additional cycle if the receiver is unable to join the multicast video stream in time to receive the intra frame from the multicast video stream. The system can use the intra frame received from the unicast message to decode the first non-intra frame of the received multicast video stream.

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In an effort to advance prosecution more rapidly, Applicants have included language directed to the above feature in amended Claim 1 and new Claim 57.

## **II Rejections Under 35 U.S.C. §103**

The Office Action rejected Claims 13–15, 17–25, 27–42 and 47–55 under 35 U.S.C. §103 as being unpatentable over U.S. Patent No. 6,728,965 (“Mao”) in view of U.S. Patent No. 5,732,217 (“Emura”) in further view of U.S. Patent No. 6,118,498 (“Reitmeier”). The Office Action rejected Claim 56 under 35 U.S.C. §103(a) as being unpatentable over Mao in view of Reitmeier in further view of U.S. Patent No. 6,738,980 (“Lin”). The Office Action rejected Claims 1–3, 6 and 12 under 35 U.S.C. §103(a) as being unpatentable over Mao in view of Emura in further view of Reitmeier, in still further view of Lin. The Office Action rejected Claims 16 and 26 under 35 U.S.C. §103 as being unpatentable over Mao in view of Emura in further view of Reitmeier in still further view of U.S. Patent Application Publication No. 2005/0240961 (“Jerding”). Applicants respectfully disagree.

The present response discusses the rejections of the independent claims. The rejection of claims 1 and 56 will be discussed separately from the rejection of claims 13, 23, 35, 41, and 48.

### **A. Rejection of Claims 13, 23, 35, 41, and 48**

Claims 13, 23, 35, 41, and 48 stand rejected over Mao in view of Emura in further view of Reitmeier. A prima facie case of obviousness, however, requires that the combination of the references teach each and every element of the claims. As will be shown below, Mao, in view of Emura in further view of Reitmeier, does not teach 1) responding to a detected channel change request by transmitting a retained intra frame and no dependent frames for a requested channel as a unicast communication for static display, and 2) joining a multicast communication by providing a subsequent independent frame and a plurality of subsequent dependent frames for dynamic display. Although each of independent claims 13, 23, 35, 41, and 48 may be worded slightly

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different, each has a single independent frame unicasted for static display and then a joining to a multicast communication by a subsequent independent frame and its dependent frames.

Mao discloses a device for changing the channel in a digital video delivery system. Column 2, lines 26–28. The channel changer, automatically and not in response to a channel change request, captures the multiple compressed video signals and stores each signal in a cache buffer. Column 2, lines 33–35. A processor indexes or points to the synchronization frames for each buffered signal. Column 2, lines 35–36. When a subscriber requests a specific channel, the processor accesses the requested video signal using the indexed frame, and as a result, reduces the amount of time needed to locate a first frame of the new channel to send. Column 2, lines 37–44.

Hence, Mao is able to immediately synchronize to a new channel by accessing a synchronization frame that it has previously indexed. Column 9, lines 9–25. The indexed synchronization frame and all of its dependent frames are then quickly accessible and the dynamic display of the transmission can begin in Mao starting at the indexed synchronization frame. Column 9, lines 9–25. As such, and as the Examiner has pointed out, this scheme fails to teach unicasting an independent frame and no dependent frames in response to a channel change request, as is presently claimed.

Emura does not cure the deficiencies of Mao. Emura discloses a video on demand server capable of extracting a subset of periodically occurring “keyframes” from a video stream and sending that subset so that video can be displayed as a high-speed playback. Column 6, line 47 – column 7, line 7. Thus, in Emura, a high-speed playback comprises a series of keyframes played back at high speed where the keyframes are a small subset of all of the frames that make up the video and the keyframes are spaced out in time. Column 6, line 47 – column 7, line 7. Emura is essentially an approximation of what the user might see since a spaced out sampling of all of the video frames are selected and shown on the screen.

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Hence, Emura fails to teach “static display” of an independent frame because Emura obtains a series of keyframes and displays them as part of a timed, flowing stream of images, with none of the images being displayed any longer than any other image. Column 6, line 42 – column 7, line 7. On the contrary, the “static display” of the unicast independent frame is defined in the present claim as being displayed for an undetermined amount of time. This means the statically displayed frame is shown until the multicast communication can be joined, which could be longer or shorter than the amount of time that each frame is shown, once the dynamic display occurs, but instead depends on where in the stream the current multicast communication is (i.e., closer or farther from the next independent frame).

The Office Action states, “It would have been obvious to one of ordinary skill in the art at the time the invention was made to transmit retained intra frame and no dependent frames as taught by Emura to the channel change system of Mao in order to perform a high-speed playback at a playback speed requested from a terminal apparatus.” Page 4, lines 12–16.

Applicants disagree, however, even if the Office Action’s statement were correct, the combination of Mao and Emura would still fail to disclose that the retained intra frame and no dependent frames are transmitted in response to a channel change request. Even if the high-speed playback of Emura could be incorporated in the channel changing system of Mao, the high-speed playback feature of Emura is incompatible with the high-speed channel changing feature of Mao. The two features could only operate separately because activating Emura’s high-speed playback in response to changing the channel in Mao would cause an additional delay while the system waits for enough independent frames to be accumulated and sent to the channel requesting unit. For at least this reason, the combination of Mao and Emura fail to disclose responding to a detected channel change request by transmitting a retained intra frame and no dependent frames for a requested channel as a unicast communication for static display.

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Moreover, Emura cannot join a multicast communication with a subsequent independent frame and a plurality of subsequent dependent frames for dynamic display. Emura merely displays a series of keyframes, spaced out evenly over time, to simulate high speed playback. Column 6, line 42 – column 7, line 7. As such, each of the keyframes in Emura is an “independent frame,” so as each keyframe is shown, no dependent frames are shown, so Emura does not teach this element of the claims either. Column 2, lines 56–62. Further, the very concept of joining a multicast communication from a unicast communication is lacking in both Mao and Emura.

Reitmeier does not cure the deficiencies of Mao and Emura. Reitmeier discloses that a controller of a receiver repeatedly tunes, demodulates and decodes some or all of four channels in a scan list. Column 3, lines 10–17. An I-frame is stored for each of the decoded channels. Column 3, lines 10–17. Then, during a channel change routine, the controller determines whether the new channel is one of the channels in the scan list. Column 9, lines 15–62. If it is, the controller causes the previously received and recorded I-frame for the new channel to be displayed. Column 9, lines 15–62. If the new channel is not on the scan list, the controller freezes the display of the old channel while the new channel is retrieved. Column 9, lines 15–62.

Like Mao and Emura, Reitmeier fails to disclose or suggest that an I-frame and no dependent frames is transmitted in response to a channel change request. To the contrary, as discussed above, the I-frames of Reitmeier must be received and stored prior to a channel change request for the I-frames to be available for use by a channel changing routine.

Further, though Reitmeier discloses statically displaying a previously stored I-frame for a channel while tuning to that channel, Reitmeier, like Mao and Emura, fails to disclose the concept of joining a multicast communication from a unicast communication. The receiver of Reitmeier receives the stored I-frame in the same type of communication in which it receives the new channel.

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For at least the above reasons, it is respectfully submitted that Claims 13, 23, 35, 41, and 48 and their dependent claims are patentably distinguished from Mao in view of Emura in further view of Reitmeier and are in condition for allowance.

#### **B. Rejection of Claim 1**

Claim 1 stands rejected over Mao in view of Emura in further view of Reitmeier in still further view of Lin. A prima facie case of obviousness, however, requires that the combination of the references teach each and every element of the claims. As will be shown below Mao in view of Emura in further view of Reitmeier, in still further view of Lin, does not teach 1) in response to detecting the channel change request, transmitting a retained intra frame and no dependent frames for the requested channel as a unicast communication for static display; 2) determining whether a first next decodable non-intra frame after the first retained intra frame is at least a joining time after a send point of the buffered multicast video stream segment; 3) if a first next decodable non-intra frame after the first retained intra frame is at least a joining time after a send point of the buffered multicast video stream segment, the transmitted retained intra frame is the first retained intra frame and the first next decodable non-intra frame after the first retained intra frame is a joining frame; 4) if the first next decodable non-intra frame after the first retained intra frame is less than the joining time after the send point of the buffered multicast video stream segment, the transmitted retained intra frame is the second retained intra frame and a second next decodable non-intra frame after the second retained intra frame is the joining frame; and 5) synchronizing a multicast joining operation to a multicast group corresponding to the requested channel, wherein synchronizing includes ensuring the joining frame is the oldest non-intra frame of the buffered multicast video stream segment received by the requesting device in response to the channel change request after the multicast joining operation.

Mao, Emura and Reitmeier have been described in sub-section A. Claim 1 includes all of the limitations of the independent claims discussed in sub-section A.

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Additionally, claim 1 includes a determination and a decision process based upon a joining time. The Office Action admits, “Mao, Emura and Reitmeier fail to disclose based on the request time to select which I frame as joining frame.” Page 19, lines 14–15. Therefore, the Office Action relies upon Lin for certain elements.

Lin discloses a system in which information for a channel is transmitted as two streams of data: a forward-encoded bit-stream and a reverse-encoded bit stream. Column 4, line 17 – column 5, line 29. I-frames in the two bit-streams can be aligned (Fig. 3B) or interleaved (Fig. 3C). The system of Lin can seek to any requested frame to begin play by locating the nearest I-frame in the two bit-streams and decoding the requested frame based on that nearest I-frame. Column 4, line 17 – column 5, line 29. If the nearest I-frame is before the requested frame, the requested frame is decoded using the nearest I-frame and all subsequent frames in the forward-encoded bit-stream up to the requested frame. Column 4, line 17 – column 5, line 29. If the nearest I-frame is after the requested frame, the requested frame is decoded using the nearest I-frame and all prior frames in the reverse-encoded bit-stream up to the requested frame. Column 4, line 17 – column 5, line 29.

It should be noted that Claim 1 does not recite, “based on the request time to select which I frame as joining time” as the Office Action appears to suggest. To the contrary, Claim 1 recites, “...determining whether a first next decodable non-intra frame after the first retained intra frame is at least a joining time after a send point of the buffered multicast video stream segment...”

Lin does not determine whether a first next decodable non-intra frame after a first retained intra frame is at least a joining time after a send point of the buffered multicast video stream segment. Lin merely determines which I-frame is closest to a requested frame (without consideration of either a send point or a joining time), then decodes the requested frame and the frames following that requested frame to be dynamically displayed.

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Consequently, Lin does not disclose or suggest that if a first next decodable non-intra frame after the first retained intra frame is at least a joining time after the send point of the buffered multicast video stream segment, the transmitted retained intra frame is the first retained intra frame and the first next decodable non-intra frame after the first retained intra frame is a joining frame, or that if the first next decodable non-intra frame after the first retained intra frame is less than the joining time after the send point of the buffered multicast video stream segment, the transmitted retained intra frame is the second retained intra frame and a second next decodable non-intra frame after the second retained intra frame is the joining frame.

To the contrary, Lin always decodes and displays the requested frame. The decision made by Lin relates to how to decode the requested frame (i.e., which frames from which bit-stream); not which frame will be displayed following another frame.

Further, the cited art does not disclose or suggest synchronizing a multicast joining operation to a multicast group corresponding to the requested channel, wherein synchronizing includes ensuring the joining frame is the oldest non-intra frame of the buffered multicast video stream segment received by the requesting device in response to the channel change request after the multicast joining operation. The systems of the cited references, do not, in response to a channel change request, receive a unicast intra frame and ensure that the multicast video stream is joined at the oldest non-intra frame. As a result, if a receiver operating under the cited references could not join a multicast video stream by an intra frame, the receiver must wait an entire cycle of the encoding scheme (e.g., the receiver must wait for the next intra frame in the multicast video stream) before it can decode and display the new channel, resulting in an additional delay.

Even if receivers of the cited references received and stored intra frames for one or more different channels prior to a channel change request, such receivers would not obviate Claim 1. Claim 1 states that the intra frame is transmitted in response to the

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channel change request. A system which transmitted intra frames for other channels that have not yet been requested would waste communications bandwidth by transmitting information that is unlikely to be displayed. In contrast, an exemplary system within the scope of Claim 1 improves the speed of channel changing without wasting communications bandwidth.

For the above reasons, as well as the reasons described in sub-section A, it is respectfully submitted that Claim 1 and its dependent claims are patentably distinguished from Mao in view of Emura in further view of Reitmeier in still further view of Lin and are in condition for allowance. For similar reasons, it is respectfully submitted that Claim 56 and its dependent claims are patentably distinguished from Mao in view of Emura in further view of Reitmeier in still further view of Lin and are in condition for allowance.

### **C. Rejection of Dependent Claims**

Claims 16 and 26 stand rejected over Mao in view of Emura in further view of Reitmeier in still further view of Jerding. The Office Action relies on Jerding to disclose a join command issuer that is adapted to send a join instruction message to the particular client, the join instruction message stipulating an appointed time at which the particular client is to transmit a join message to a replication point. Page 22, lines 18–20. Jerding discloses a method for providing a screen saver to a user through an interactive media services client. Paragraph 0009. The method includes providing a system operator with an interface to the programmable media services server and providing control options to allow the systems operator to select media to be presented in the screen saver utility. Paragraph 0009.

The Office Action states that Fig. 4I and paragraph 0066 of Jerding disclose an appointed time at which a client transmits a join message. Specifically, the appointed time implied and is merely as soon as the client can possibly send a response after receiving the instruction.

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However, it is respectfully submitted that Jerding does not disclose or suggest 1) responding to a detected channel change request by transmitting a retained intra frame and no dependent frames for a requested channel as a unicast communication for static display, and 2) joining a multicast communication by providing a subsequent independent frame and a plurality of subsequent dependent frames for dynamic display. It is therefore respectfully submitted that Jerding does not cure the deficiencies of Mao, Emura and Reitmeier discussed above.

For at least the above reasons, it is respectfully submitted that Claim 16 is patentably distinguished from Mao in view of Emura in further view of Reitmeier in still further view of Jerding and is in condition for allowance. For similar reasons, it is respectfully submitted that Claim 26 is patentably distinguished from Mao in view of Emura in further view of Reitmeier in still further view of Jerding and is in condition for allowance.

### **III New Claim 57**

It is respectfully submitted that the cited references do not disclose or suggest in response to sending the channel change request, (1) receiving from the server at the requesting device a retained intra frame for a requested channel as a unicast communication, the multicast video stream segment including the retained intra frame, (2) statically displaying the retained intra frame at the requesting device, (3) receiving, as a multicast communication, a portion of the multicast video stream corresponding to the requested channel, the portion including a plurality of consecutive multicast frames of the multicast video stream segment, the portion not including the retained intra frame, (4) decoding, at the requesting device, an oldest non-intra frame of the portion using the retained intra frame, the oldest non-intra frame being the first non-intra frame subsequent to the retained intra frame in the multicast video stream segment, and (5) switching from statically displaying the received retained intra frame at the

requesting device to dynamically displaying the portion of the multicast video stream at the requesting device.

As discussed above, the cited references do not disclose or suggest in response to sending a channel change request, receiving an intra frame for the new channel by a unicast message and switching the receiver to receiving a multicast video stream of the new channel such that the receiver starts receiving from the multicast video stream after that intra frame is transmitted by the multicast video stream. As a result, systems of the cited reference cannot be as fast and communications bandwidth efficient as systems within the scope of Claim 57.

#### **IV M.P.E.P. §707.07(j)**

M.P.E.P. §707.07(j) states:

“...If the examiner is satisfied after the search has been completed that patentable subject matter has been disclosed and the record indicates that the applicant intends to claim such subject matter, the examiner may note in the Office action that certain aspects or features of the patentable invention have not been claimed and that if properly claimed such claims may be given favorable consideration...”

Applicants respectfully request that the Examiner make Applicants aware of any subject matter disclosed by the present application which the Examiner believes is patentable. By doing so, the Examiner would help expedite prosecution by enabling Applicants to amend the present claims or draft new claims directed to such subject matter.

#### **CONCLUSION**

Accordingly, in view of the above amendment and remarks it is submitted that the claims are patentably distinct over the prior art and that all the rejections to the claims have been overcome. Reconsideration and reexamination of the above Application is requested. Based on the foregoing, Applicants respectfully requests that

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the pending claims be allowed, and that a timely Notice of Allowance be issued in this case. If the Examiner believes, after this amendment, that the application is not in condition for allowance, the Examiner is requested to call the Applicant's attorney at the telephone number listed below.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicants hereby request any necessary extension of time. If there is a fee occasioned by this response, including an extension fee that is not covered by an enclosed check please charge any deficiency to Deposit Account No. 50-0463.

Respectfully submitted,

Microsoft Corporation

Date: November 14, 2008

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